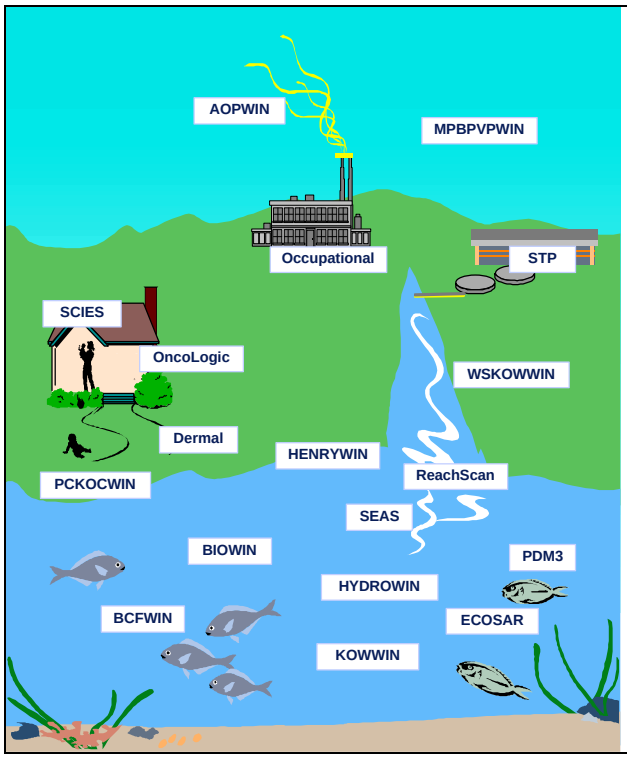
P2 Assessment Framework

Slide Presentation



OPPT's Pollution Prevention Assessment Framework

P2: The Big Picture

- ✓ **Stakeholders make chemical choices**
- ✓ **Choose among competing products / processes**
- ✓ **Choose chemicals based on**
  - **Performance**
  - **Cost**
  - **Availability**

P2: The Big Picture

- ✓ **Information informs decision making!**
- ✓ **Stakeholders often forced to choose among chemicals without information on risk tradeoffs.**

Necessity is the Mother of Invention

CHALLENGE:	**Evaluate risks of new chemical substances.**
GROUND RULES:	**Little or no toxicology data. Complete evaluations - 90 days**
APPROACH:	**Screening-level assessments: SARS.**
	Develop analytical methods. Update methods to reflect new data.

Screening-level Assessment Methodologies

- ✓ Physical / chemical property estimation methods
- ✓ Environmental fate / exposure
- ✓ Persistence & bioconcentration
- ✓ Ecological effects (quantitative)
- ✓ Human exposure
- ✓ Human health effects (semi-quantitative)
- ✓ Risk assessment

Purpose Of The Pollution Prevention Framework

- ✓ **Provide important risk-related information not previously available.**
- ✓ **Help inform decision making and promote the design, development, and application of safer chemicals and processes.**

Pollution Prevention Through Technology Transfer

PREMISE:	**Information informs decision making.**
HYPOTHESIS:	**OPPT's P2 Framework can provide useful data to stakeholders.**
APPROACH:	**Technology transfer: Pilot Project**
OUTREACH:	**Meetings with CMA & SOCMA**
PARTNERSHIP:	**Eastman Kodak/OPPT**

"The methodologies supplied by the Agency allowed those chemicals with the greatest potential hazard to be eliminated from further consideration at a point in time when the economic impact of the decision was minimal" (Kodak)

“...particularly useful when used to minimize the potential synthesis or generation of hazardous wastes and chemicals before production processes has been decided upon.” (Kodak)

“...these methods, if applied early enough in a chemical or product development cycle, can have an immediate and positive impact on programs to reduce the potential hazards from chemical manufacturing operations” (Kodak)

"…The P2 Framework helps us understand potential risk-related concerns associated with new chemical substances under development."

(Shell)

"Use of the P2 Framework gives us a sense for potential health and safety concerns early on in the product development cycle -- a definite plus for Shell." **(Shell)**

"P&G found EPA's environmental assessment methods of critical importance in the early stages of our R&D efforts."

(Procter & Gamble)

". . . We regularly use the EPIWIN and ECOSAR software . . . to assess our products from an environmental standpoint." **(S.C. Johnson Wax)**

"The P2 Framework provides a logical, consistent structure for comparing competing products and processes..."

(Shell)

"Moreover, as industry strives to achieve Sustainable Development, the kind of guidance these . . . methods provide will increase in importance."

(Procter & Gamble)

"The P2 Framework . . . Helps our firm identify environmentally preferable products." **(Shell)**

". . . Other industries will benefit from use of the P2 Framework." **(Shell)**

"EPA . . . may underestimate the true value of these tools."

(Procter & Gamble)

P2 Framework: FY 98 & 99

1) Workshops and Demonstration Projects
2) P2 Partnerships Program
3) P2 Pays: Environmental Cost Accounting
4) OECD Initiative: Tools For R&D

P2 Framework Workshops

Where & When

- Region 9: Univ. of CA, San Jose (10/97)
- Region 1: Univ. of NH, Durham (5/98)
- Region 5: Univ. of IL at Chicago (8/98)

P2 Partnerships Program: Goals

- ✓ Provide technical support to stakeholders
- ✓ Demonstrate P2 Framework capabilities within the context of specific product development / use situations
- ✓ Develop additional case studies for use in future outreach efforts

P2 Partnerships Program: Implementation

- ✓ University of New Hampshire
  - ◆ New Hampshire P2 Partnership
- ✓ Michigan Tech., University of Wisconsin, University of Minnesota
  - ◆ Center for Clean Industrial and Treatment Technologies

P2 Pays:
Environmental Cost Accounting:
Kodak Press Release

“ EPA-Kodak Project to Improve Product Stewardship, Shortens Development Cycles, Saves Costs ”

P2 Pays: Environmental Cost Accounting: Kodak Press Release

- ✓ **“We found that the method is totally transferable”**
- ✓ **“...most of the technology can indeed be used widely by industry, even by smaller firms, although some might lack staff sufficiently trained in toxicology and environmental science.”**
- ✓ **“It allowed us to...review dozens of other chemicals. In some cases, the chemicals were reformulated; in others, they were discontinued.”**

P2 Pays:
Environmental Cost Accounting:
Kodak Press Release

- ✓ **"The pilot project also determined that the new test method would help minimize the generation of wastes which typically result from lengthy chemical-development programs"**
- ✓ **"Result: Far less waste"**

P2 Pays:
Environmental Cost Accounting:
Kodak Press Release

- ✓ **"...we saved Kodak tens of thousands of dollars in development costs. . . with each one tested."**

Environmental Cost Accounting Study: Kodak Case Study

1) **Evaluate business benefits Kodak accrued as a result of application of OPPT's P2 Framework**
   - **Savings in R&D and product development**
   - **Reduce cycle time: Time to market**
   - **Reduce waste management costs**
   - **Reduce down stream product liability**

Environmental Cost Accounting Study: Kodak Case Study (continued)

2) **Develop generic model for use in other industry sectors**

3) **Tellus Institute**
   Co-Funding: EPA / Kodak

OECD: Tools For R&D Screening

1) Help industry in OECD member countries become more aware of availability and value of chemical screening methodologies.
2) Encourage industry to screen possible chemical product formulations early on in R&D processes.
3) Evaluate advances in assessment methods among member countries and recommend priorities for methods development and improvement.

OPPT / ORD Collaboration

- ✓ Understand ORD initiatives and applicability to P2 Framework / Technology Transfer
- ✓ Work collaboratively to expand / improve assessment methodologies
- ✓ Work together on methods for assessing non-cancer health endpoints

P2 Framework Collaborations

- ✓ Air Force
- ✓ Alco
- ✓ BASF
- ✓ Calgon
- ✓ Chevron
- ✓ Clorox
- ✓ Intel
- ✓ Milliken
- ✓ PPG
- ✓ SC Johnson Wax
- ✓ Shell

Speaker Biography: Bill Waugh (OPPT)

Present: Risk Assessment Division, Office of Pollution Prevention and Toxics, U.S. Environmental Protection Agency

Previous: Smithsonian Institution, U.S. Department of Agriculture, University of Maryland, Agency for International Development, Department of Defense

EDUCATION

M.S. in Medical Entomology

Bill began to focus on pesticides (insecticides) that control insects of public health concern, his interests broadened to toxicology of industrial chemicals.

He has published nationally and internationally, he has a strong interest in issues associated with risk assessment and her lectured and taught on risk assessment and related topics.

Working with his colleagues at EPA, the group has developed the Pollutiion Prevention Framework, a compilation of EPA=s most important screening-level computerized methodologies for predicting risk based on chemical structure. Bill and his colleagues are here today to discuss the P2 Framework.